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TABLE ABBR-continued

XML	eXtensible Markup Language
XRES	EXpected user RESponse
XOR	eXclusive OR
ZC	Zadoff-Chu
ZP	Zero Power

[0373] The corresponding structures, material, acts, and equivalents of all means or steps plus function elements in the claims below are intended to include any structure, material or act for performing the function in combination with other claimed elements are specifically claimed. The description of the present disclosure has been presented for purposes of illustration and description, but is not intended to be exhaustive or limited to the disclosure in the form disclosed. Many modifications and variations will be apparent to those of ordinary skill without departing from the scope and spirit of the disclosure. The embodiments were chosen and described in order to best explain the principles of the disclosure and the practical application, and to enable others of ordinary skill in the art to understand the disclosure for embodiments with various modifications as are suited to the particular use contemplated.

[0374] The foregoing description provides illustration and description of various example embodiments, but is not intended to be exhaustive or to limit the scope of embodiments to the precise forms disclosed. Modifications and variations are possible in light of the above teachings or may be acquired from practice of various embodiments. Where specific details are set forth in order to describe example embodiments of the disclosure, it should be apparent to one skilled in the art that the disclosure can be practiced without, or with variation of, these specific details. It should be understood, however, that there is no intent to limit the concepts of the present disclosure to the particular forms disclosed, but on the contrary, the intention is to cover all modifications, equivalents, and alternatives consistent with the present disclosure and the appended claims.

What is claimed is:

1. A next generation evolved NodeB (ng-eNB), comprising:

processor circuitry configured to generate a radio resource control (RRC) message to configure a user equipment (UE), the RRC message including a non-zero power channel state information reference signal resource set (NZP-CSI-RS-ResourceSet) that indicates one or more non-zero power channel state information reference signal (NZP-CSI-RS) resources; and

communication circuitry communicatively coupled with the processor circuitry, the communication circuitry being configured to transmit the RRC message to the UE,

wherein the communication circuitry is configured to use same antenna ports for the NZP-CSI-RS resources in the NZP-CSI-RS-ResourceSet having a same port index based on the NZP-CSI-RS-ResourceSet including a TRS-Info parameter set to 'on', and

wherein the communication circuitry is configured to transmit NZP-CSI-RS resources in the NZP-CSI-RS-ResourceSet with a same downlink spatial domain transmission filter based on the NZP-CSI-RS-ResourceSet including a repetition parameter set to 'on'.

2. The ng-eNB of claim 1, wherein the RRC message comprises a sounding reference signal (SRS) configuration (SRS-Config),

wherein the SRS-Config comprises one or more SRS resource sets (SRS-ResourceSets), at least one SRS-ResourceSet of the one or more SRSResourceSets comprising one or more SRS resources.

3. The ng-eNB of claim 2, wherein the communication circuitry is further configured to generate the RRC message to configure the UE with at least one SRS resource for a configured transmission scheme via a higher layer parameter and the at least one SRS resource is indicated by a received downlink control information (DCI) or the RRC message.

4. The ng-eNB of claim 2, wherein the one or more SRS resources are configured to be used for one of periodic SRS transmissions, semi-persistent SRS transmissions, or aperiodic SRS transmissions.

5. The ng-eNB of claim 2, wherein the at least one SRS-ResourceSet includes at least one SRS resource to be used for aperiodic SRS transmissions, and

wherein the communication circuitry is further configured to transmit downlink control information (DCI) including an SRS request field indicating the at least one SRS resource to trigger transmission of aperiodic SRS transmissions.

6. The ng-eNB of claim 1, wherein the NZP-CSI-RS-ResourceSet includes a QCL-Info-PeriodicCSI-RS parameter to indicate a transmission beam for individual ones of the one or more NZP-CSI-RS resources.

7. A user equipment (UE), comprising:

interface circuitry configured to receive a radio resource control (RRC) message, the RRC message including a non-zero power channel state information reference signal resource set (NZP-CSI-RS-ResourceSet) that indicates one or more non-zero power channel state information reference signal (NZP-CSI-RS) resources; and

baseband circuitry, coupled to the interface circuitry, configured to:

assume the NZP-CSI-RS resources in the NZP-CSI-RS-ResourceSet having a same port index are to be transmitted with same antenna ports based on the NZP-CSI-RS-ResourceSet including a TRS-Info parameter set to 'on', and

assume the NZP-CSI-RS resources in the NZP-CSI-RS-ResourceSet are to be transmitted with a same downlink spatial domain transmission filter based on the NZP-CSI-RS-ResourceSet including a repetition parameter set to 'on'.

8. The UE of claim 7, wherein only one of the TRS-Info parameter or the repetition parameter is configured by the NZP-CSI-RS ResourceSet.

9. The UE of claim 7, wherein the RRC message comprises a sounding reference signal (SRS) configuration (SRS-Config),